Notes.

THE Dean and Chapter of Westminster Abbey have given consent for a memorial tablet to the late Sir William Ramsay to be placed in Westminster Abbey as part of the Ramsay memorial. The tablet will be placed immediately below the tablet erected to the memory of Hooker, the botanist. The Ramsay Memorial Committee has commissioned Mr. Charles L. Hartwell to prepare the tablet with a portrait medallion of Sir William Ramsay, and Mr. Hartwell is now at work upon the tablet.

THE council of the Royal Photographic Society has opened a fund by means of which some permanent memorial may be set up at Lacock to W. H. Fox Talbot, upon whose researches the present-day practice of photography and of photo-engraving has been built up. As president of the society, Dr. G. H. Rodman appeals to all who are interested in photography to contribute to the fund. Donations, large or small, to the memorial will be gratefully accepted and acknowledged by Mr. W. L. F. Wastell, vice-president, Royal Photographic Society, 35 Russell Square, London, W.C.1.

IT is announced that a medal, to be known as the Meldola medal, will be presented annually by the Society of Maccabæans for the most noteworthy chemical work of the year carried out by a British subject who is not more than thirty years of age on completing the work. The award will be made by the council of the Institute of Chemistry acting with one member of the Society of Maccabæans, and power to vary the conditions of award is vested in the committee of the society and the council of the institute acting jointly. The object of instituting the medal is to recognise merit among the younger generation of chemists and to perpetuate the memory of Prof. Raphael Meldola, the distinguished chemist who served as president both of the society presenting the medal and of the Institute of Chemistry. It is hoped that the first presentation will be made at the annual general meeting of the Institute of Chemistry on March 1, 1922.

THE ever-increasing demands for information regarding the vegetable resources of South Africa, its plant poisons and plant pests, have given considerable stimulus to botanical research in that country. One result has been the establishment of the National Herbarium at Pretoria, which now includes all the more important private collections in the country. It has also been decided to issue from time to time a publication, which has been named *Bothalia* in honour of the first Union Premier and Minister of Agriculture, the late General Botha, consisting of contributions from the National Herbarium. It will include descriptions of new or little-known plants, cryptogamic and phanerogamic. Workers in systematic botany will find this publication of considerable interest and value, and intending subscribers should communicate with the Chief, Division of Botany, P.O. Box 994, Pretoria. The first part is now ready for issue, and may be obtained from the above address, price 7*s*. 6*d*. post free.

AT the meeting of the Royal Society of New South Wales held on June 1 Mr. R. T. Baker, curator and economic botanist of the Technological Museum, Sydney, was presented with the Mueller medal by the president, Mr. E. C. Andrews. This medal was awarded to Mr. Baker by the Australasian Association for the Advancement of Science at the annual congress held in Melbourne last January for his eminent services to botany, particularly in regard to the Eucalypts. In addition to his work on the Eucalypts, Mr. Baker is the author of more than 100 original papers on the Australian flora, as well as of several monographs, such as "The Cabinet Timbers of Australia" and his *magnum opus*, "The Hardwoods of Australia," recently published. On the art side he has published a work on "The Australian Flora in Applied Art," a book just now in request by art designers in England and America. Mr. Baker is also the author of several monographs in conjunction with Mr. H. G. Smith, assistant curator of the museum. These, like those mentioned above, are all written for the express purpose of developing the natural resources of Australia, and so lead to extended industrial enterprise for the good of the community. The two most important of this collaboration are "The Pines of Australia" and "The Eucalypts and their Essential Oils," both of which have opened new fields for the development of the valuable assets amongst Australia's natural resources. Although Australian botany was specially mentioned by the Australasian Association for the Advancement of Science, yet Mr. Baker's work has extended into other branches of technology covered by the various sections of the Sydney Technological Museum, which, besides being a museum, is a bureau of scientific information for the commercial world around it.

PROF. ARTHUR DENDY discusses in a recent number of the *Eugenics Review* the perennial problem of human evolution. He believes that "the evidence of progress in conformity with a great general principle or law of Nature is conclusive." But evolution tends to take place in a wave-like manner, and not in a continuous straight line. There is apt to be a set-back after each climax. The reason for this is partly because available stores of energy become exhausted, and the race may not be plastic enough to adjust itself to new conditions or skilful enough to tap new supplies. The line of racial persistence is one of re-adjustment in the light of education. "The great principle of evolution . . . consists in sacrifice and re-birth at more or less frequent intervals—sacrifice of all those accretions which have become effete or developed beyond the limits of usefulness, and re-birth by making a fresh start with a clean sheet." Man has a unique capacity for this task, since he has the gift of foresight and the power of deliberate control. But this is as yet inadequately developed. It must be developed by education—an education which will on one hand seek to utilise the available results of scientific investigation—on which are based, as Huxley said, the rules of the life-and-death game—

and on the other will recognise that the lasting and satisfying values are those of truth, love, and beauty. The address is a notable one—a wise, scientific sermon by a leading biologist.

An account has been published (G. P. Putnam's Sons, Ltd.) of a meeting convened by Dr. Marie Stopes on May 31, in the Queen's Hall, London, for the discussion of constructive birth control. The chairman, the Rt. Hon. G. H. Roberts, M.P., spoke of the desirability of letting in daylight and securing trustworthy information; Dr. Jane L. Hawthorne urged the necessity of instructing those who sacrifice health and happiness through a rapid succession of childbirths; Dr. E. Killick Milard laid emphasis on the eugenic aspect of birth-control, not only in promoting the welfare of a sound family, but also in preventing the appearance of a bad one, and submitted that the experience of vast numbers of intelligent people who have used contraceptives has demonstrated that they are, on the whole, effective and harmless. Dr. Marie Stopes directed attention to the opening of the first birth control clinic in this country, and emphasised the far-reaching racial importance of positive, as well as negative, control. The advance of science, she said, has made it possible to present a material scientific basis with which to embody spiritual ideals. Instead of attempting the ascetic repression of mutual love, what should be aimed at is a culture of a love associated with a utilisation of available knowledge. "Married lovers should play the part of parents *only* when they can add individuals of value to the race." The interesting booklet contains a series of impressions of the meeting by the Rt. Hon. J. H. Clynes, M.P., and others. The whole forms a restrained, but urgent, presentation of the case for birth-control linked to a sound idea of marital relations.

Many interesting suggestions for further research into the methods of fish preservation are made by Mr. H. F. Taylor in a paper contained in the Proceedings of the American Fisheries Society for the year 1920. The paper deals with "The Principles Involved in the Preservation of Fish by Salt," and it contains the results of a series of experiments made by the author and others. The purest salt obtainable is recommended for ordinary methods of salting, for the impurities contained in crude products are of much significance. Calcium and magnesium salts retard penetration and harden and whiten the flesh, accentuating the "saltiness" of dried fish. Pure sodium chloride gives a "mild and sweet" cure, but the flesh is yellowish and soft. Dry salting leads to a more efficient and rapid preservation than does the use of a strong brine. Reddening of the flesh in dried salt fish is due either to a bacillus or to a spirochæte, which organisms can be traced to "solar," but not to mined, sea salt. "Rusting" in fatty fish is due to oxidation of fatty acids split off from the fats by enzyme action. Indeed, most of the defects of fish preserved in any way appear to be due to autolysis. Saltpetre, which is sometimes used as an accessory preservative, helps in the retention of a slight pinkiness of the flesh by forming a nitroso-compound with the hæmoglobin of the blood. These are some of the very important matters now being investigated in America—privately, it should be noted, for the author despairs of any helpful research by Government institutions, and looks to the fishing industry for adequate attention to problems of industrial fishery importance.

The problem of sex-determination in amphibia has for a long time been known to present special complexities. The evidence of R. Hertwig and others must be accepted as proving that external influences have an effect on the proportions of the sexes, and consequently, whatever be the true interpretation of this evidence, the simple rule of genetic predetermination cannot be held to apply without qualification to these animals. Intersexes have also often been observed, especially in the frog (see a recent summary by F. A. E. Crew, Proc. Roy. Phys. Soc. Edin., 1921, vol. xx., p. 236). M. Ch. Champy has lately made an interesting contribution to this subject (*Comptes rendus Ac. Sci.*, May 9, 1921). He found that by starving male newts (*Triton alpestris*) severely at the time when spermatogenesis should be active, the development of the secondary sexual characters is arrested, and the animal remains in a more or less neuter state, as in winter. In the following spring the testes of these animals are found to be replaced by bands of fatty tissue, and the secondary sexual characters do not reappear. Two such males, after being fed up in winter, were observed to undergo a peculiar transformation, assuming somewhat the coloration of the female. One was dissected on January 11, and showed only the fatty bands replacing the testes. The other was kept until April 8, and became entirely female in appearance. On dissection each fatty band was found to contain an ovary with young ovocytes, much as in newly metamorphosed females, together with an oviduct. The specimen in question had at the time of capture been an undoubted male, and reason is given for believing that it had fathered the fertile eggs of a female with which it had been paired in captivity before the treatment began.

In the Transactions of the Royal Society of Edinburgh (vol. lii., part iv., No. 30) Mr. J. M. Wordie publishes a paper on the soundings and deep-sea deposits of the Shackleton Expedition in the Weddell Sea. The soundings were 152 in number, and were made while the *Endurance* was a free agent and during her drift in the pack until she was crushed in October, 1915. This important series of soundings amplifies the only previous work in the Weddell Sea by the *Scotia* and the *Deutschland,* and was the principal scientific outcome of Shackleton's venture. No map accompanies the paper, but Mr. Wordie points out how the soundings remove all probability of Morrell's reported landfall or Ross's "strong appearance of land" in the north-west of the Weddell Sea. However, an island is still possible, even if unlikely. The continental shelf off Coats Land, discovered by the *Scotia,* has been proved to be narrow and irregular in contour. On the west of the Weddell Sea the *Endurance* took 103 soundings in depths under 275 fathoms, and proved the existence of a series of stepped terraces with boundaries running north-east and south-west. These terraces run parallel with the eastern shore of the Weddell Sea, but at right angles to the presumed west coast. This terraced structure suggests that the Antarctic continental shelf is the result of earth-movements. The soundings of the *Endurance* were taken far west to touch the supposed deep in the Biscoe Sea, and they throw no further light on the problem of the connection of Antarctica with other southern continents. The rock-fragments obtained in the dredge, which on account of the movements of ice in the Weddell Sea probably all came from the east, tend to confirm the idea previously held that Coats Land belongs to the plateau type of Antarctica. Their evidence, however, is inconclusive.

THE Royal Geographical Society has recently issued two lists of place-names giving the spelling decided on by its permanent committee on geographical names for British official use. The first of these contains about 300 European names, and the second some 200 Asiatic names. Other lists are to follow. The aim has been to adopt so far as possible the native spelling, but in a number of cases the conventional form in use in this country has wisely been retained. The difficulty is to find a dividing line between the two systems. It is advocated, for instance, that the terminal "s" should be dropped in Marseilles, but retained in Lyons. Norwegian names beginning with a "K," like Kristiania, are spelt with a "Ch" in this list, for no apparent reason except usage. On the other hand, Gothenburg, the anglified version of Göteborg, is discarded, and Helsingör is given in place of Elsinore. It is not clear why Arkhangel should be spelt with "c" instead of "k"; the latter may not be the more usual practice, but has the advantage of expressing with least chance of ambiguity the sound of the Russian letter. Similarly Harbin, the form advocated in the list, gives the sound less truly than Kharbin. According to the Royal Geographical Society's own system of transliteration (*Geographical Journal*, January, 1921), the sound is equivalent to "kh." The correct transliteration is used in Sakhalin. It may be correct, but it will prove difficult in usage, to substitute such forms as Bosporus or Bukhara for the more usual Bosphorus or Bokhara.

THE Geological Survey has just issued the latest volume of its Special Reports on the Mineral Resources of Great Britain, dealing with rock-salt and brine, by Dr. R. L. Sherlock. The report is clearly written and very complete, reference being made to many even of the smaller brine springs existing in the country. It must be borne in mind that salt is one of the most important minerals produced in Britain, and that it forms the basis of an extremely important section of our heavy chemical trade; on this account information as to the occurrence and distribution of salt is of the greatest importance, and the Survey has done a valuable piece of work in collecting the information which has here been brought together.

DR. H. S. WASHINGTON contributes a paper of general interest on "The Chemistry of the Earth's Crust" to the Journal of the Franklin Institute, vol. cxc., p. 757, December, 1920, in which he correlates the regions of mass-defect and mass-excess, as shown by gravity-observations, with what is known of the chemical composition of the underlying rocks throughout the globe. He uses the analyses collected in the monumental Professional Paper 99 of the U.S. Geological Survey, and he finds that the rock-densities calculated from these analyses correspond well with the theory of isostasy. There is "a complete harmony between average specific gravity and average elevation everywhere," the rocks being less dense under the areas of higher land. In *Science* for March 4 C. K. Leith discusses the nature of the movements by rock-fracture or rock-flowage that occur in lower regions of the crust, and concludes that these are much like those that take place in the zone accessible to observation. Hence we need not postulate any single zone of flowage, such as Barrell's asthenosphere, and we are led towards "the Chamberlin conception of a heterogeneous structural behaviour of the earth."

DIURNAL variation in wind velocity and direction at different heights is dealt with by Mr. J. Durward in Professional Notes No. 15, published by the Meteorological Office. An attempt is made to discuss the results of pilot-balloon ascents made on the British Front in France at intervals of four hours. It is shown that winds up to a height of 3000 ft. have a minimum velocity at about noon, and the higher one goes the later does this minimum occur. At 4000 to 6000 ft. observations are generally insufficient, but there is evidence that west winds decrease by day and east winds increase. In general, a decrease in velocity is accompanied by a backing which may amount to as much as 20°. Results obtained on the same subject from pilot-balloons in Italy and in Batavia are referred to, and are said to be in close agreement.

CLOUDINESS in the United States is the subject of an article in the *Geographical Review* for April–June, 1920, by Prof. R. de C. Ward, of Harvard University. As a climatic element the amount of cloudiness is recorded by eye on a scale 0 to 10, and from observations made two or three times a day the mean annual and mean monthly amounts are calculated. In addition to this information the average number of clear, partly cloudy, and cloudy days in each month should be given. Maps of monthly and annual cloudiness for the United States have been available for the last thirty years or more, but the new maps drawn by the author have the advantage of more complete data collected and supplied by the Weather Bureau of the United States. In all, 190 stations are employed, and of these 65 had more than forty years of observations. The mean annual maps show that there are two districts of maximum cloudiness, both more than 60 per cent., one lying over most of the Great Lakes region and extending northward over the St. Lawrence Valley and northern New England, and the other on the extreme north-western Pacific coast. Both these regions are said to be under marked cyclonic control. The northern States are more cloudy than the southern, and the Pacific coast as a whole is less cloudy than the Atlantic. July and August are the least cloudy months, whilst in the southern States the minimum cloudiness is in autumn. In Florida the cloudiest season occurs during the summer months.

THE report of the National Physical Laboratory for 1920 (the first year of the directorship of Sir J. E. Petavel) records an unusually large number of staff changes. Sir A. Schuster has become chairman of the executive committee; Mr. F. E. Smith has left to become Director of Research at the Admiralty; and Messrs. C. C. Paterson, A. Campbell, A. Kinnes, B. P. Dudding, E. A. Coad-Pryor, and Dr. N. Campbell have resigned, and some of these posts have not been filled. Mr. R. V. Southwell has been appointed superintendent of the aerodynamics department. The fees for tests have been increased, and the number of instruments sent for test has decreased as compared with 1913, notably in the case of optical and electrical instruments. A large amount of work has been done for industrial research associations and for Government Departments, but in future Admiralty work will be independent of the Laboratory. The programme of work for the present year includes the measurement of physical constants required in industry and in the medical profession, the improvement of the tests for photographic lenses, the study of the characteristics of three-electrode valves for wireless telegraphy, the manufacture of length standards of high accuracy, investigations on lubrication, tests of models of aeroplanes with air-screws running, light alloys research, and investigation of the interaction of ships.

THE Bureau of Standards, Washington, has issued a pamphlet on "The Spectrophotoelectrical Sensitivity of Proustite," by W. W. Coblentz, which is now ready for distribution, and may be obtained by anyone interested by addressing his request to the Bureau. This investigation is a continuation of previous work on various substances. At 20° C. the spectrophotoelectrical sensitivity curve of proustite has a wide maximum in the ultra-violet, with a weak, ill-defined band at 0·6μ. By cooling with liquid air the intrinsic sensitiveness is greatly increased, and there is a very large development of this band, which now shows a maximum at 0·578μ.

Our Astronomical Column.

THE AUGUST METEORS.—Mr. W. F. Denning writes:—"This annual shower returns to a maximum on about August 11, and the circumstances are rather favourable this year, the moon being near her first quarter and setting at 11h. 19m. G.M.T. There is no reason to expect an unusually abundant display, but it will be sure to provide an interesting shower of bright, streaking meteors. The larger objects should be carefully recorded, so that their real paths may be computed. The position of the radiant point and its change of place ought to be determined on each night when the atmosphere is clear enough for the purpose, for the shower is already fairly rich at the end of July, and is well maintained until the middle of August. This date, however, does not limit its duration, for occasional meteors are seen towards the end of the month. The morning hours are usually best, for the radiant is at a greater altitude after midnight than at an earlier period. Though this system of meteors has been sedulously observed during a great number of years, there is still much to be learnt concerning its annual variations, date of maximum, changes in the position and character of the radiant point, and in the relative strength of the numerous contemporary showers which are visible."

SEARCH FOR METEORS FROM THE PONS-WINNECKE RADIANT.—Prof. Barnard reports that he watched for meteors all night on June 24, 25, 26, and 27; although the search was fruitless it has considerable negative value as showing that the dense part of the meteor swarm did not intersect the orbit of the earth, so that it would appear probable that the shower of June, 1916, will remain the sole example of a shower from the Pons-Winnecke radiant.

Mr. R. G. Chandra, of Jessore, India, also reports a fruitless search for meteors on the night of June 25. He states that Prof. Ray, of Bolpore, saw two meteors radiating from the neighbourhood of θ Boötis.

Prof. Barnard mentions a telephonic report of a shower lasting ten minutes on the night of June 27. No further particulars were available.

STATISTICS OF PROPER MOTIONS.—No. 30 of the Publications of the Astronomical Laboratory at Groningen, by Prof. J. C. Kapteyn and Dr. P. J. Van Rhijn, is a continuation of the valuable studies in stellar statistics that have appeared in this series. It commences with a *résumé* of recent catalogues and other sources of our knowledge of proper motions, such as Mr. Innes's researches with the blink microscope. The question of the effective area of the sky covered in each research is considered—that is, if a catalogue is not exhaustive down to some assigned magnitude, it is considered to be exhaustive for a smaller area of the sky, determined by the number of stars contained in the catalogue.

One of the most interesting questions dealt with is the number of stars in the whole sky with motion between certain limits. The following table has been formed from data in Tables 6 and 7 of the book. For these large proper motions the distribution is shown to be independent of galactic latitude.

Limits of Proper Motion.

No. of stars in whole sky.	0·2″	0·3″	0·4″	0·5″	0·6″	0·7″	0·8″	0·9″	1·00″	1·50′	2·00″
Mag. 6	169	71	30	26	16	7	5	3	14	1	5
7	304	120	56	61	40	23	12	6	13	3	3
8	520	216	76	124	36	21	21	11	18	6	12
9	1125	410	103	38	47	25	34	13	51	21	9
10	1425	261	166	133	48	29	24	10	33	10	19
11	1770	342	200	135	63	117	45	36	90	9	0
12	1770	450	450	68	45	23	23	90	113	45	0
13	1620	690	400	225	135	23	113	45	23	23	28
14	1490	800	350	158	68	113	45	0	0	0	0

The 169 in the first line means that there are 169 stars in the whole sky with annual proper motion between 0·2″ and 0·3″ and magnitude between 6·0 and 6·9. Similarly in other cases. The figures for the faint stars are rough, since they are deduced from the examination of very limited areas.